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PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

Date of mailing (day/month/year)
30 November 2000 (30.11.00)

International application No.
PCT/EP00/03517

Applicant's or agent's file reference
PG3681/PCT

International filing date (day/month/year)
19 April 2000 (19.04.00)

Priority date (day/month/year)
24 April 1999 (24.04.99)

Applicant

BONNEY, Stanley, George et al

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
28 October 2000 (28.10.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Charlotte ENGER

Telephone No.: (41-22) 338.83.38

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty

For receiving Office use only

International Application No. **PCT/EP 00 / 03517**
EPO-DG-1

International Filing Date
19 APR 2000 (19.04.2000)

EUROPEAN PATENT OFFICE
PCT INTERNATIONAL APPLICATION (71)
Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum) **PG3681/ PCT**

Box No. I TITLE OF INVENTION
Packaging Method

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below).

Glaxo Group Limited
Glaxo Wellcome House
Berkeley Avenue
Greenford, Middlesex
UB6 0NN
GB

☐ This person is also inventor.

Telephone No. 0171 493 4060

Facsimile No. 0181 966 8838

Teleprinter No. 25456

State (i.e. country) of nationality:
GB

State (i.e. country) of residence:
GB

This person is applicant for the purposes of: ☐ all designated States ☒ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANTS AND/OR (FURTHER) INVENTORS

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

BONNEY, Stanley George
Glaxo Group Ltd.
Park Road
Ware, Herts.
SG12 ODP
GB

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:
GB

State (i.e. country) of residence:
GB

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: ☒ agent ☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country).

PIKE, Christopher Gerard
Pike & Co.,
Hayes Loft, 68A Hayes Place
Marlow, Buckinghamshire
SL7 2BT, GB

Telephone No.: 01628-471869

Facsimile No.: 01628-471878

Teleprinter No.:

☐ Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to

Express Mail Label
EL395895217US

(January 2000)

See Notes to the request form

Continuation of Box No. III FURTHER APPLICANTS AND/OR (FURTHER) INVENTORS

If none of the following sub-boxes is used, this sheet is not to be included in the request.

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

GODFREY, James William
Glaxo Group Ltd.
Park Road
Ware, Herts.
SG12 ODP
GB

This person is:

- ☐ applicant only
☒ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:

GB

State (i.e. country) of residence:

GB

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:

State (i.e. country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:

State (i.e. country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
☐ applicant and inventor
☐ inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:

State (i.e. country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Sheet No.

Box No. V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

- ☒ **AP ARIPO Patent:** GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ **EA Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP European Patent:** AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ **OA OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | |
|---|--|
| <input checked="" type="checkbox"/> AE United Arab Emirates | <input checked="" type="checkbox"/> LR Liberia |
| <input checked="" type="checkbox"/> AL Albania | <input checked="" type="checkbox"/> LS Lesotho |
| <input checked="" type="checkbox"/> AM Armenia | <input checked="" type="checkbox"/> LT Lithuania |
| <input checked="" type="checkbox"/> AT Austria | <input checked="" type="checkbox"/> LU Luxembourg |
| <input checked="" type="checkbox"/> AU Australia | <input checked="" type="checkbox"/> LV Latvia |
| <input checked="" type="checkbox"/> AZ Azerbaijan | <input checked="" type="checkbox"/> MA Morocco |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina | <input checked="" type="checkbox"/> MD Republic of Moldova |
| <input checked="" type="checkbox"/> BB Barbados | <input checked="" type="checkbox"/> MG Madagascar |
| <input checked="" type="checkbox"/> BG Bulgaria | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia |
| <input checked="" type="checkbox"/> BR Brazil | |
| <input checked="" type="checkbox"/> BY Belarus | <input checked="" type="checkbox"/> MN Mongolia |
| <input checked="" type="checkbox"/> CA Canada | <input checked="" type="checkbox"/> MW Malawi |
| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein | <input checked="" type="checkbox"/> MX Mexico |
| <input checked="" type="checkbox"/> CN China | <input checked="" type="checkbox"/> NO Norway |
| <input checked="" type="checkbox"/> CR Costa Rica | <input checked="" type="checkbox"/> NZ New Zealand |
| <input checked="" type="checkbox"/> CU Cuba | <input checked="" type="checkbox"/> PL Poland |
| <input checked="" type="checkbox"/> CZ Czech Republic | <input checked="" type="checkbox"/> PT Portugal |
| <input checked="" type="checkbox"/> DE Germany | <input checked="" type="checkbox"/> RO Romania |
| <input checked="" type="checkbox"/> DK Denmark | <input checked="" type="checkbox"/> RU Russian Federation |
| <input checked="" type="checkbox"/> DM Dominica | <input checked="" type="checkbox"/> SD Sudan |
| <input checked="" type="checkbox"/> EE Estonia | <input checked="" type="checkbox"/> SE Sweden |
| <input checked="" type="checkbox"/> ES Spain | <input checked="" type="checkbox"/> SG Singapore |
| <input checked="" type="checkbox"/> FI Finland | <input checked="" type="checkbox"/> SI Slovenia |
| <input checked="" type="checkbox"/> GB United Kingdom | <input checked="" type="checkbox"/> SK Slovakia |
| <input checked="" type="checkbox"/> GD Grenada | <input checked="" type="checkbox"/> SL Sierra Leone |
| <input checked="" type="checkbox"/> GE Georgia | <input checked="" type="checkbox"/> TJ Tajikistan |
| <input checked="" type="checkbox"/> GH Ghana | <input checked="" type="checkbox"/> TM Turkmenistan |
| <input checked="" type="checkbox"/> GM Gambia | <input checked="" type="checkbox"/> TR Turkey |
| <input checked="" type="checkbox"/> HR Croatia | <input checked="" type="checkbox"/> TT Trinidad and Tobago |
| <input checked="" type="checkbox"/> HU Hungary | <input checked="" type="checkbox"/> TZ United Republic of Tanzania |
| <input checked="" type="checkbox"/> ID Indonesia | <input checked="" type="checkbox"/> UA Ukraine |
| <input checked="" type="checkbox"/> IL Israel | <input checked="" type="checkbox"/> UG Uganda |
| <input checked="" type="checkbox"/> IN India | <input checked="" type="checkbox"/> US United States of America |
| <input checked="" type="checkbox"/> IS Iceland | |
| <input checked="" type="checkbox"/> JP Japan | <input checked="" type="checkbox"/> UZ Uzbekistan |
| <input checked="" type="checkbox"/> KE Kenya | <input checked="" type="checkbox"/> VN Viet Nam |
| <input checked="" type="checkbox"/> KG Kyrgyzstan | <input checked="" type="checkbox"/> YU Yugoslavia |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | <input checked="" type="checkbox"/> ZA South Africa |
| | <input checked="" type="checkbox"/> ZW Zimbabwe |
| <input checked="" type="checkbox"/> KR Republic of Korea | Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet: |
| <input checked="" type="checkbox"/> KZ Kazakhstan | <input checked="" type="checkbox"/> Antigua and Barbuda AG |
| <input checked="" type="checkbox"/> LC Saint Lucia | <input checked="" type="checkbox"/> Algeria DZ |
| <input checked="" type="checkbox"/> LK Sri Lanka | |

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)

(second sheet) (January 2000)

See Notes to the request form

Sheet No 4


Box No. VI PRIORITY CLAIM		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box		
		Where earlier application is		
Filing Date of Earlier Application (day/month/year)	Number of earlier application	national application: country	regional application:* regional Office	international application: receiving Office
item (1) (24.04.99) 24 April 1999	9909358.5	GB		
item (2)				

☐ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s):

* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

Box No. VII INTERNATIONAL SEARCHING AUTHORITY	
Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used): ISA/	Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority): Date (day/month/year) Number Country (or regional office)

Box. VIII CHECK LIST; LANGUAGE OF FILING	
This international application contains the following number of sheets: request : 4 description (excluding sequence listing part) : 14 claims : 8 abstract : 1 drawings : 6 sequence listing part of description : Total number of sheets : 33	This international application is accompanied by the item(s) marked below: 1. <input checked="" type="checkbox"/> fee calculation sheet 2. <input checked="" type="checkbox"/> separate signed power of attorney 3. <input checked="" type="checkbox"/> copy of general power of attorney; reference number, if any: 4. <input type="checkbox"/> statement explaining lack of signature 5. <input checked="" type="checkbox"/> priority document (1) identified in Box No. VI as item(s): 1 6. <input type="checkbox"/> translation of international application into (language): 7. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material 8. <input type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form 9. <input type="checkbox"/> other (specify):
Figure of the drawings which should accompany the abstract: None	Language of filing of the international application: English

Box No. IX SIGNATURE OF APPLICANT OR AGENT	
Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).	
Christopher Gerard Pike Agent for the Applicants	

For receiving Office use only		2. Drawings <input checked="" type="checkbox"/> received: <input type="checkbox"/> not received:
1. Date of actual receipt of the purported international application 19 APR 2000 (19. 04. 2000)	3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 11(2):	6. <input checked="" type="checkbox"/> Transmittal of search copy delayed until search fee is paid	
5. International Searching Authority specified by the applicant: ISA/		

Date of receipt of the record copy by the International Bureau	For International Bureau use only
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REC'D 31 MAY 2001

WIPO

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PG3681/PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP00/03517	International filing date (day/month/year) 19/04/2000	Priority date (day/month/year) 24/04/1999
International Patent Classification (IPC) or national classification and IPC B65B11/50		
Applicant GLAXO GROUP LIMITED et al.		



1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 11 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 28/10/2000	Date of completion of this report 29.05.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Felgenhauer, H-P Telephone No. +49 89 2399 2618 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP00/03517

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1,4,6-14	as originally filed	
2,3,5	with telefax of	04/05/2001

Claims, No.:

1-82	with telefax of	04/05/2001
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Drawings, sheets:

1/6-6/6	as originally filed
---------	---------------------

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP00/03517

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 1 - 82
	No:	Claims
Inventive step (IS)	Yes:	Claims
	No:	Claims 1-82
Industrial applicability (IA)	Yes:	Claims 1-82
	No:	Claims

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

Item V

1. The following documents cited in the International Search Report are referred to
D1...EP-A-0 483 569
D2...EP-A-0 472 850.
- 2.1 The subject-matter of claim 1 differs from the method disclosed in D1 (cf. abstract; column 1, lines 41 - 48; column 4, line 51 - column 5, line 3; column 5, lines 35 - 43; figures 1, 2, 5, 6, 11, 12) in that the method concerns
 - a) forming of a blister pack, a blister pocket containing a product, wherein
 - b) between a cover sheet and the blister pocket a hermetically sealing join is provided.

D1 relates to a method of forming plastic containers such as e.g. "a semi-rigid plastic container filled with a product and (having) a plastic lid bonded to the container" (column 1, lines 14 - 16), "a container having partitions which divide a container into a plurality of compartments" (column 4, lines 51 - 55) and more generally D1 concerns "preformed plastic containers" of "a plurality of different shapes" to which "plastic lids or other cover material" are sealed (column 1, lines 44 - 47).

Although not explicitly mentioned in D1, the containers referred to in this document need - due to the structural similarities - to be considered as encompassing those normally defined as blister packs (which - other than being called this way - are not further defined in claim 1 of the application) or at least - in terms of their structure and shape and of the material the container and cover sheets are made of - as being so close to blister packs that, without further essential modification being required, the method according to D1 can be used for making blister packs according to feature a). Furthermore, although not referred to explicitly, it is apparent for the person skilled in the art that applying the sealing method according to D1 properly - or in case such an obvious requirement is to be fulfilled due to the nature of the pack and its content(s) - a sealing join as defined by feature b) results.

The manner in which the blister pack according to claim 1 is provided with a cover sheet, namely the application of laser energy to form a join, is the one disclosed in D1 for closing of a plastic container with a lid (claim 1; column 1, line 41 - column 2, line 7).

Consequently the method disclosed within D1 (cf. the above mentioned disclosures) can, without essential modifications being required, utilised as the method to form a blister pack defined in claim 1, comprising features a) and b) referred to above. Thus the method defined in claim 1 cannot be considered as involving an inventive step (Article 33 (3) PCT).

In this respect it also shall be pointed out that the application does - besides referring to blister packs - not disclose any features which clearly would distinguish such blister packs from the packs disclosed in D1 and which furthermore would cause the person skilled in the art not to employ the known method for the purpose defined in claim 1.

For completeness sake furthermore it shall be pointed out that the subject-matter of claim 1 does, for reasons corresponding to the ones given above with respect to D1, not involve an inventive step in view of D2 (cf. abstract; column 1, lines 44 - 55; figures 1, 2).

- 2.2 For reasons corresponding to the ones given above with respect to claim 1 also the blister pack according to claim 82 cannot be considered as involving an inventive step.
- 2.3 The additional features of claims 2 - 33 relating to details of the method of forming a blister pack come, depending on circumstances, within regular design practice, starting from D1 or D2, such that they cannot be considered as leading to subject-matter involving inventive step.

Concerning claim 2 cf. e.g. D1 figures 11, 12; claims 8, 9 cf. D1 column 4, lines 51 - 58; claims 24 - 28 cf. D1 column 5, lines 38 - 45; claim 33 cf. D1, column 5, lines 37 - 41.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP00/03517

- 2.4 Since it is obvious that various products can be packed in a generally known blister pack or likewise in a closed plastic container according to D1 (cf. e.g. column 1, lines 8 - 10) and since for the products referred to in claims 34 - 81 no additional, inventive, method step of forming a blister pack is defined the additional features of claims 34 - 81 do not lead to subject-matter involving inventive step (Article 33 (3) PCT).

Item VII

- 1.1 Each independent claim should have been properly cast in the two-part form (Rule 6.3 b) PCT).
- 1.2 Reference signs in parentheses should have been inserted in the claims to increase their intelligibility, Rule 6.2(b) PCT. This applies to both the preamble and characterising portion.
- 1.3 To meet the requirements of Rule 5.1(a)(ii) PCT the documents D1 and D2 should have been identified in the description and the relevant background art disclosed therein should have been briefly discussed.



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : B65B 11/50	A1	(11) International Publication Number: WO 00/64747 (43) International Publication Date: 2 November 2000 (02.11.00)
(21) International Application Number: PCT/EP00/03517 (22) International Filing Date: 19 April 2000 (19.04.00) (30) Priority Data: 9909358.5 24 April 1999 (24.04.99) GB (71) Applicant (for all designated States except US): GLAXO GROUP LIMITED [GB/GB]; Glaxo Welcome House, Berkeley Avenue, Greenford, Middlesex UB6 0NN (GB). (72) Inventors; and (75) Inventors/Applicants (for US only): BONNEY, Stanley, George [GB/GB]; Glaxo Group Ltd., Park Road, Ware, Herts. SG12 0DP (GB). GODFREY, James, William [GB/GB]; Glaxo Group Ltd., Park Road, Ware, Herts. SG12 0DP (GB). (74) Agent: PIKE, Chirstopher, Gerard; Pike & Co., Hayes Loft, 68A Hayes Place, Marlow, Buckinghamshire SL7 2BT (GB).		(81) Designated States: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
(54) Title: METHOD FOR MAKING A BUSTER PACKAGE (57) Abstract There is provided a method of forming a blister pack comprising contacting a base sheet having a blister pocket therein with a cover sheet and applying laser energy to form a join between said cover sheet and said blister pocket of said base sheet. The blister pack is preferably in the form of an elongate strip. The blister pack is suitable for the containment of a range of different products, particularly medicaments.		

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INTERNATIONAL SEARCH REPORT

National Application No.

EP 00/03517

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B65B11/50

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B65B B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 483 569 A (FMC) 6 May 1992 (1992-05-06)	1-4, 6-8, 10, 13, 19-21, 25-27, 34, 35, 84
Y	column 3, line 26 -column 5, line 58; figures 1-12	38, 39, 42, 43, 48, 49, 54-57, 65, 66, 71-73, 75, 81, 82
X	EP 0 472 850 A (FMC) 4 March 1992 (1992-03-04) abstract; figures 1-5	1, 84
	-/-	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

International Application No.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

Patent Application No

/EP 00/03517

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Further advantages of the use of laser energy in the fabrication of the blister packs of the invention include precisely controllable low weld energy enabling the join to be formed in a precise manner without affecting any of the other parts of the blister pack. Laser welds are furthermore clean and may be engineered to be hermetic in nature to achieve good moisture protection properties. Also, since laser output is typically very stable it is possible to achieve consistent weld repeatability.

Still further advantages are achievable when the blister packs are formed from base and/or cover sheets comprising laminates of different materials. The energy of the laser source may be chosen to join only selective parts of the laminate together whilst maintaining the integrity of the other parts of the laminate. For example, the laser energy source may be focussed to pass through plastic layers in a laminate but to have a welding effect on any adjacent metal layers.

PCT Patent application no. WO98/16430 describes a method and apparatus for laser welding of plastic materials to form plastic bags. No mention is made of blister packs for use in the containment of medicament.

According to one aspect of the present invention there is provided a method of forming a blister pack comprising contacting a base sheet having a blister pocket ^{containing a product} therein with a cover sheet and applying laser energy to form ^{hermetically sealing} a join between the cover sheet and the blister pocket of the base sheet.

The join is, for example, a weld or solder join. A weld is herein considered a join formed by fusion of two materials, whereas a solder is considered to be a join formed between two materials and a fusible alloy. A hermetically sealing join comprises a seal which is airtight.

Suitably, the base sheet has a plurality of blister pockets therein and laser energy is applied to form a join between the cover sheet and each blister pocket of the base sheet. Preferably, the base sheet and cover sheet are elongate (e.g. elongate strips) and the base sheet has a plurality of blister pockets spaced therealong. More preferably, laser energy is applied to join each blister pocket of the elongate base sheet in a sequential fashion.

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In one aspect, the laser energy derives from a laser source which is movable relative to the base and cover sheet to enable correct positioning of the join.

- 5 In another aspect, the laser energy derives from a fixed laser source and the base and cover sheet are movable to enable correct positioning of the join.

- 10 In a further aspect, the laser energy is guidable by means of a guide mechanism to enable correct positioning of the join. Preferably, the guide mechanism includes one or more movable mirrors. Optionally, the guide mechanism includes one or more galvanometer scanners.

- ~~Preferably, the join comprises a hermetic seal. That is to say it is airtight.~~
- 15 In one aspect, the join has a zig-zag configuration. In another aspect, the join has a multi-dot configuration. In a further aspect, the join is continuous.

- 20 The laser source can be any source suitable for laser welding, including carbon dioxide, diode, fibre and copper vapour laser sources. The laser beam can also be generated by a Q-switched Neodymium Yttrium Aluminium Garnet laser source. Typically the maximum average power is from 10W to 200W, preferably from 25W to 100W and the maximum peak
- 25 power is from 10kW to 1kW, preferably from 5kW to 3kW.

In one aspect, the laser energy is applicable in continuous fashion.

- 30 In another aspect, the laser energy is applicable in pulsed fashion. Preferably, the laser source has a pulse width of from 0.5 to 20 microseconds and a maximum pulse energy of from 10 to 100 Joules.

- In a further aspect, the join has a join width of from 5 μ m to 10mm, preferably from 10 μ m to 1mm, more preferably from 10 to 200 μ m most
- 35 preferably from 20 to 100 μ m.

Suitably, the base sheet and cover sheet comprise material selected from the group consisting of metal foil, organic polymeric material and paper.

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In a further aspect the method comprises cutting the blister pack to provide sprocket holes therein. Optionally the method comprises cutting semi-circular incisions in the blister pack depressible to form sprocket holes therein. These sprocket holes can, on engagement with suitable sprockets, be used to drive the blister packs along a production line or within a delivery system such as a multi-dose drug delivery system.

Suitably, the method of the invention is controllable by a computer.

~~10 In another aspect of the present invention, the method comprises pre-filling the or each blister pocket with a product.~~

In one aspect, the method comprises pre-filling the or each blister pocket with an electronic component. Preferably, the electronic component is selected from the group consisting of semi-conductor, integrated circuit chip, fuse and battery. Other forms of electronic components may be packaged using this method in order to protect them from moisture and dust.

20 In another aspect, the method comprises pre-filling the or each blister pocket with food. Preferably, the food is selected from the group consisting of meat, mycoprotein, milk, cheese, flour, pasta, rice, oil, sugar, confectionery, vegetable, herbal, snack, convenience and fruit foodstuffs. Examples of snack foodstuffs include potato crisps, nuts and popcorn, while convenience foods are those pre-prepared meals sold in supermarkets and similar outlets. Other foodstuffs may be packaged using this method, especially those having a short shelf life. The method can be used to package processed and un-processed food, such processing occurring either prior to or following packaging, as for example with heating or sterilisation. Food supplements, such as vitamins, may also be packaged in this manner.

35 In a further aspect, the method comprises pre-filling the or each blister pocket with a beverage. Preferably, the beverage is selected from the group consisting of water, milk, coffee, cocoa, tea, fruit, carbonated and alcoholic drinks. Other beverages which can also be packaged in this manner include nutritional healthcare drinks.

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Claims

1. A method of forming a blister pack comprising contacting a base sheet having a blister pocket^{containing a product} therein with a cover sheet and applying laser energy to form a^{hermetically sealing} join between said cover sheet and said blister pocket of said base sheet.
2. A method according to claim 1, wherein the base sheet has a plurality of blister pockets therein and laser energy is applied to form a join between the cover sheet and each blister pocket of said base sheet.
3. A method according to claim 2, wherein the base sheet and cover sheet are elongate and the base sheet has a plurality of blister pockets spaced therealong.
4. A method according to claim 3, wherein laser energy is applied to join each blister pocket of the elongate base sheet in a sequential fashion.
5. A method according to any of claims 1 to 4, wherein the laser energy derives from a laser source which is movable relative to the base and cover sheet to enable correct positioning of the join.
6. A method according to any of claims 1 to 4, wherein the laser energy derives from a fixed laser source and the base and cover sheet are movable to enable correct positioning of the join.
7. A method according to any of claims 1 to 4, wherein the laser energy is guidable by means of a guide mechanism to enable correct positioning of the join.
8. A method according to claim 7, wherein said guide mechanism includes one or more movable mirrors.
9. A method according to claim 7, wherein the guide mechanism includes one or more galvanometer scanners.
- ~~10. A method according to any of claims 1 to 9, wherein the join comprises a hermetic seal.~~

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10 11. A method according to any of claims 1 to ~~10~~, wherein the join has a zig-zag configuration.

9

5 11 ~~12~~. A method according to any of claims 1 to ~~10~~, wherein the join has a multi-dot configuration.

9

12 ~~13~~. A method according to any of claims 1 to ~~10~~, wherein the join is continuous.

10

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13 ~~14~~. A method according to any of claims 1 to ~~13~~, wherein the laser energy is supplied by a laser source having a maximum average power of from 10W to 200W, and a maximum peak power of from 1kW to 10kW.

13

15 14 ~~15~~. A method according to any of claims 1 to ~~14~~, wherein the laser energy is applicable in continuous fashion.

13

15 ~~16~~. A method according to any of claims 1 to ~~14~~, wherein the laser energy is applicable in pulsed fashion.

20

15

16 ~~17~~. A method according to claim ~~16~~, wherein the laser source has a pulse width of from 0.5 to 20 microseconds and a maximum pulse energy of from 10 to 100 Joules.

16

25 17 ~~18~~. A method according to any of claims 1 to ~~17~~, wherein the join has a join width of from 5 μ m to 10mm, preferably from 10 μ m to 1mm, more preferably from 10 to 200 μ m, most preferably from 20 to 100 μ m.

17

30 18 ~~19~~. A method according to any of claims 1 to ~~18~~, wherein the base sheet and cover sheet comprise material selected from the group consisting of metal foil, an organic polymeric material and paper.

18

19 ~~20~~. A method according to claim ~~19~~, wherein the base sheet and cover sheet comprise different materials.

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20 ~~21~~. A method according to either of claims ~~19~~ or ~~20~~, wherein the base sheet and/or the cover sheet comprises a laminate.

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- 21 ~~22~~ A method according to any of claims 1 to ¹⁷~~21~~, additionally comprising applying laser energy to form one or more additional joins between each blister pocket.
- 5 22 ~~23~~. A method according to claim ²¹~~22~~, wherein said one or more additional joins are concentric to the join.
- 10 23 ~~24~~. A method according to any of claims 1 to ²²~~23~~, additionally comprising foldably interlocking the base sheet with the cover sheet to provide a plurality of join sites therebetween and applying laser energy to form plural joins at each said site.
- 15 24 ~~25~~. A method according to any of claims 1 to ²³~~24~~, additionally comprising applying laser energy to form score lines on the or each cover sheet and/or base sheet.
- 25 ~~26~~. A method according to claim ²⁴~~25~~, wherein said score lines facilitate access to each blister pocket.
- 20 26 ~~27~~. A method according to claim ²⁴~~25~~, wherein the score lines facilitate separation of an individual blister pocket from the blister pack.
- 25 27 ~~28~~. A method according to claim ²⁴~~25~~, wherein the score lines facilitate visual and/or electronic identification of said blister pack and/or blister pocket.
- 28 ~~29~~. A method according to any of claims 1 to ²⁷~~28~~, additionally comprising applying laser energy to cut the blister pack.
- 30 29 ~~30~~. A method according to claim ²⁸~~29~~, comprising cutting the blister pack to a specifiable shape.
- 35 30 ~~31~~. A method according to either of claims ²⁸~~29~~ or ²⁹~~30~~, comprising cutting the blister pack to a specifiable size.
- 31 ~~32~~. A method according to any of claims ²⁸~~29~~ to ³⁰~~31~~, comprising cutting the blister pack to provide sprocket holes therein.

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32 ~~33~~. A method according to claim ~~32~~, comprising cutting semi-circular incisions in the blister pack depressible to form sprocket holes therein.

33 ~~34~~. A method according to any of claims 1 to ~~33~~, wherein the method is controllable by a computer.

~~35. A method according to any of claims 1 to 34 additionally comprising pre-filling the or each blister pocket with a product.~~

any of 1 to 33
10 34 ~~36~~. A method according to ~~claims 35~~, wherein said product is an electronic component.

34
15 35 ~~37~~. A method according to claim ~~36~~, wherein said electronic component is selected from the group consisting of semi-conductor, integrated circuit chip, fuse and battery.

any of 1 to 33
36 ~~38~~. A method according to ~~claims 35~~, wherein the product is a food.

36
20 37 ~~39~~. A method according to claim ~~38~~, wherein said food is selected from the group consisting of meat, mycoprotein, milk, cheese, flour, pasta, rice, oil, sugar, confectionery, vegetable, herbal, snack, convenience and fruit foodstuffs.

any of 1 to 33
25 38 ~~40~~. A method according to ~~claims 35~~, wherein the product comprises a beverage.

38
30 39 ~~41~~. A method according to claim ~~40~~, wherein said beverage is selected from the group consisting of water, milk, coffee, cocoa, tea, fruit, carbonated and alcoholic drinks.

any of 1 to 33
40 42. A method according to ~~claims 35~~, wherein the product comprises a toiletry.

40
35 41 ~~43~~. A method according to claim ~~42~~, wherein said toiletry is selected from the group consisting of toothpaste, soap, mouthwash, shampoo, skin and face cream.

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any of 1 to 33

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42 ~~44~~. A method according to ¹⁹claims ~~35~~, wherein the product comprises a cleanser.

5 43 ~~45~~. A method according to claim ⁴²~~44~~, wherein said cleanser is selected from the group consisting of soap, detergent, enzymic preparation and organic solvent.

44 ~~46~~. A method according to ^{any of 1 to 33}claims ~~35~~, wherein the product comprises a disinfectant.

10 45 ~~47~~. A method according to claim ⁴⁴~~46~~, wherein said disinfectant is selected from the group consisting of sterilant, antiseptic and bleach.

15 46 ~~48~~. A method according to ^{any of 1 to 33}claims ~~35~~, wherein the product comprises a light-sensitive material.

47 ~~49~~. A method according to claim ⁴⁶~~48~~, wherein said light-sensitive material comprises a photographic film.

20 48 ~~50~~. A method according to ^{any of 1 to 33}claims ~~35~~, wherein the product comprises a marking material.

25 49 ~~51~~. A method according to claim ⁴⁸~~50~~, wherein said marking material is selected from the group consisting of toner, ink, dye, pigment, acid and alkali.

50 50 ~~52~~. A method according to ^{any of 1 to 33}claims ~~35~~, wherein the product comprises a covering material.

30 51 ~~53~~. A method according to claim ⁵⁰~~52~~, wherein said covering material is selected from the group consisting of paint, pigment, dye, corrosion inhibitor, electrical conductor, electrical insulator and static inhibitor.

35 52 ~~54~~. A method according to ^{any of 1 to 33}claims ~~35~~, wherein the product comprises a toy.

53 ~~55~~. A method according to claim ⁵²~~54~~, wherein said toy is selected from the group consisting of model, figure, doll, animal, jig-saw and game.

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any of 1 to 33

54 ~~58~~. A method according to ~~claim 33~~⁵⁴, wherein the product comprises haberdashery.

5 ~~55~~ ~~57~~. A method according to claim ~~58~~⁵⁴, wherein said haberdashery is selected from the group consisting of button, bobbin, needle, pin, eye, hook and fastener.

10 ~~56~~ ~~58~~. A method according to ~~claim 35~~^{any of 1 to 33}, wherein the product comprises a tool.

~~57~~ ~~59~~. A method according to claim ~~58~~⁵⁶, wherein said tool comprises a domestic tool.

15 ~~58~~ ~~60~~. A method according to claim ~~59~~⁵⁷, wherein said domestic tool is selected from the group consisting of can opener, bottle opener, ring-pull opener, scissors, knife, fork and spoon.

20 ~~59~~ ~~61~~. A method according to claim ~~58~~⁵⁶, wherein said tool comprises a home maintenance tool.

60 ~~62~~. A method according to claim ~~61~~⁵⁹, wherein said home maintenance tool is selected from the group consisting of nail, screw, pin, wire, screwdriver, knife, brush, spanner, ruler and marker.

25 ~~61~~ ~~63~~. A method according to ~~claim 35~~^{any of 1 to 33}, wherein the product comprises stationery.

30 ~~62~~ ~~64~~. A method according to claim ~~63~~⁶¹, wherein said stationery is selected from the group consisting of pencil, pen, ruler, crayon, eraser, marker, stencil, protractor, compass and paper.

~~63~~ ~~65~~. A method according to ~~claim 35~~^{any of 1 to 33}, wherein the product is an adhesive.

35 ~~64~~ ~~66~~. A method according to claim ~~65~~⁶³, wherein said adhesive bonds materials selected from the group consisting of paper, plastic, wood, rubber, glass and metal.

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any of 1 to 33

65 67. A method according to ~~claims 35~~ wherein the product is an agrochemical.

65

5 66 68. A method according to claim 67, wherein said agrochemical is selected from the group consisting of herbicide, insecticide, fungicide, rodenticide, nematocide, acaricide and plant growth regulator.

any of 1 to 33

10 67 69. A method according to ~~claims 35~~ wherein the product comprises a plant seed.

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68 70. A method according to claim 69, wherein said seed is derived from plants selected from the group consisting of monocotyledonous and dicotyledonous plants.

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any of 1 to 33

69 71. A method according to ~~claims 35~~ wherein the product comprises a contraceptive.

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20 70 72. A method according to claim 71, wherein said contraceptive is either a contraceptive device or a contraceptive drug.

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71 73. A method according to claim 72, wherein said contraceptive device is selected from the group consisting of condom, diaphragm, sponge and coil.

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72 74. A method according to claim 72, wherein said contraceptive drug is selected from the group consisting of spermicide, estrogen, ethinyl estradiol, progesterone, levonorgestrel and norgestrel.

any of 1 to 33

30 73 75. A method according to ~~claims 35~~ wherein the product comprises a medical instrument.

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74 76. A method according to claim 75, wherein said medical instrument is selected from the group consisting of scalpel, thermometer and syringe.

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any of 1 to 33

75 77. A method according to ~~claims 35~~ wherein the product comprises laboratory equipment.

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76 78. A method according to claim ~~77~~, wherein said equipment is selected from the group consisting of dispenser tip, microbial filter, filter paper, aseptic container, petri-plate, vial, test tube, tissue-culture vessel and pipette.

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any of 1 to 33

77 79. A method according to ~~claims 35~~ wherein the product comprises a catemenial product.

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78 80. A method according to claim 79, wherein said catemenial product comprises a tampon.

10

any of 1 to 33

79 81. A method according to ~~claims 35~~ wherein the product comprises a medicament.

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15 80 82. A method according to claim 81, wherein said medicament is in dry powder, tablet, liquid, paste, cream or capsular form.

79 80

81 83. A method according to either of claims ~~81~~ or ~~82~~, wherein said medicament is selected from the group consisting of albuterol, salmeterol, ipratropium bromide, fluticasone propionate and beclomethasone dipropionate and salts or solvates thereof and any mixtures thereof.

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82-84. Blister pack formable by the method of any of claims 1 to ~~50~~.

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Further advantages of the use of laser energy in the fabrication of the blister packs of the invention include precisely controllable low weld energy enabling the join to be formed in a precise manner without affecting any of the other parts of the blister pack. Laser welds are furthermore clean and may be engineered to be hermetic in nature to achieve good moisture protection properties. Also, since laser output is typically very stable it is possible to achieve consistent weld repeatability.

Still further advantages are achievable when the blister packs are formed from base and/or cover sheets comprising laminates of different materials. The energy of the laser source may be chosen to join only selective parts of the laminate together whilst maintaining the integrity of the other parts of the laminate. For example, the laser energy source may be focussed to pass through plastic layers in a laminate but to have a welding effect on any adjacent metal layers.

PCT Patent application no. WO98/16430 describes a method and apparatus for laser welding of plastic materials to form plastic bags. No mention is made of blister packs for use in the containment of medicament.

According to one aspect of the present invention there is provided a method of forming a blister pack comprising contacting a base sheet having a blister pocket therein with a cover sheet and applying laser energy to form a join between the cover sheet and the blister pocket of the base sheet.

The join is, for example, a weld or solder join. A weld is herein considered a join formed by fusion of two materials, whereas a solder is considered to be a join formed between two materials and a fusible alloy.

Suitably, the base sheet has a plurality of blister pockets therein and laser energy is applied to form a join between the cover sheet and each blister pocket of the base sheet. Preferably, the base sheet and cover sheet are elongate (e.g. elongate strips) and the base sheet has a plurality of blister pockets spaced therealong. More preferably, laser energy is applied to join each blister pocket of the elongate base sheet in a sequential fashion.

In one aspect, the laser energy derives from a laser source which is movable relative to the base and cover sheet to enable correct positioning of the join.

5 In another aspect, the laser energy derives from a fixed laser source and the base and cover sheet are movable to enable correct positioning of the join.

10 In a further aspect, the laser energy is guidable by means of a guide mechanism to enable correct positioning of the join. Preferably, the guide mechanism includes one or more movable mirrors. Optionally, the guide mechanism includes one or more galvanometer scanners.

15 Preferably, the join comprises a hermetic seal. That is to say it is airtight.

In one aspect, the join has a zig-zag configuration. In another aspect, the join has a multi-dot configuration. In a further aspect, the join is continuous.

20 The laser source can be any source suitable for laser welding, including carbon dioxide, diode, fibre and copper vapour laser sources. The laser beam can also be generated by a Q-switched Neodymium Yttrium Aluminium Garnate laser source. Typically the maximum average power is from 10W to 200W, preferably from 25W to 100W and the maximum peak
25 power is from 10kW to 1kW, preferably from 5kW to 3kW.

In one aspect, the laser energy is applicable in continuous fashion.

30 In another aspect, the laser energy is applicable in pulsed fashion. Preferably, the laser source has a pulse width of from 0.5 to 20 microseconds and a maximum pulse energy of from 10 to 100 Joules.

In a further aspect, the join has a join width of from 5 μ m to 10mm, preferably from 10 μ m to 1mm, more preferably from 10 to 200 μ m most
35 preferably from 20 to 100 μ m.

Suitably, the base sheet and cover sheet comprise material selected from the group consisting of metal foil, organic polymeric material and paper.

In a further aspect the method comprises cutting the blister pack to provide sprocket holes therein. Optionally the method comprises cutting semi-circular incisions in the blister pack depressible to form sprocket holes therein. These sprocket holes can, on engagement with suitable sprockets, be used to drive the blister packs along a production line or within a delivery system such as a multi-dose drug delivery system.

Suitably, the method of the invention is controllable by a computer.

In another aspect of the present invention, the method comprises pre-filling the or each blister pocket with a product.

In one aspect, the method comprises pre-filling the or each blister pocket with an electronic component. Preferably, the electronic component is selected from the group consisting of semi-conductor, integrated circuit chip, fuse and battery. Other forms of electronic components may be packaged using this method in order to protect them from moisture and dust.

In another aspect, the method comprises pre-filling the or each blister pocket with food. Preferably, the food is selected from the group consisting of meat, mycoprotein, milk, cheese, flour, pasta, rice, oil, sugar, confectionery, vegetable, herbal, snack, convenience and fruit foodstuffs. Examples of snack foodstuffs include potato crisps, nuts and popcorn, while convenience foods are those pre-prepared meals sold in supermarkets and similar outlets. Other foodstuffs may be packaged using this method, especially those having a short shelf life. The method can be used to package processed and un-processed food, such processing occurring either prior to or following packaging, as for example with heating or sterilisation. Food supplements, such as vitamins, may also be packaged in this manner.

In a further aspect, the method comprises pre-filling the or each blister pocket with a beverage. Preferably, the beverage is selected from the group consisting of water, milk, coffee, cocoa, tea, fruit, carbonated and alcoholic drinks. Other beverages which can also be packaged in this manner include nutritional healthcare drinks.

Claims

1. A method of forming a blister pack comprising contacting a base sheet having a blister pocket therein with a cover sheet and applying laser energy to form a join between said cover sheet and said blister pocket of said base sheet.
2. A method according to claim 1, wherein the base sheet has a plurality of blister pockets therein and laser energy is applied to form a join between the cover sheet and each blister pocket of said base sheet.
3. A method according to claim 2, wherein the base sheet and cover sheet are elongate and the base sheet has a plurality of blister pockets spaced therealong.
4. A method according to claim 3, wherein laser energy is applied to join each blister pocket of the elongate base sheet in a sequential fashion.
5. A method according to any of claims 1 to 4, wherein the laser energy derives from a laser source which is movable relative to the base and cover sheet to enable correct positioning of the join.
6. A method according to any of claims 1 to 4, wherein the laser energy derives from a fixed laser source and the base and cover sheet are movable to enable correct positioning of the join.
7. A method according to any of claims 1 to 4, wherein the laser energy is guidable by means of a guide mechanism to enable correct positioning of the join.
8. A method according to claim 7, wherein said guide mechanism includes one or more movable mirrors.
9. A method according to claim 7, wherein the guide mechanism includes one or more galvanometer scanners.
10. A method according to any of claims 1 to 9, wherein the join comprises a hermetic seal.

11. A method according to any of claims 1 to 10, wherein the join has a zig-zag configuration.
- 5 12. A method according to any of claims 1 to 10, wherein the join has a multi-dot configuration.
13. A method according to any of claims 1 to 10, wherein the join is continuous.
- 10 14. A method according to any of claims 1 to 13, wherein the laser energy is supplied by a laser source having a maximum average power of from 10W to 200W, and a maximum peak power of from 1kW to 10kW.
- 15 15. A method according to any of claims 1 to 14, wherein the laser energy is applicable in continuous fashion.
16. A method according to any of claims 1 to 14, wherein the laser energy is applicable in pulsed fashion.
- 20 17. A method according to claim 16, wherein the laser source has a pulse width of from 0.5 to 20 microseconds and a maximum pulse energy of from 10 to 100 Joules.
- 25 18. A method according to any of claims 1 to 17, wherein the join has a join width of from 5 μ m to 10mm, preferably from 10 μ m to 1mm, more preferably from 10 to 200 μ m, most preferably from 20 to 100 μ m.
- 30 19. A method according to any of claims 1 to 18, wherein the base sheet and cover sheet comprise material selected from the group consisting of metal foil, an organic polymeric material and paper.
20. A method according to claim 19, wherein the base sheet and cover sheet comprise different materials.
- 35 21. A method according to either of claims 19 or 20, wherein the base sheet and/or the cover sheet comprises a laminate.

22. A method according to any of claims 1 to 21, additionally comprising applying laser energy to form one or more additional joins between each blister pocket.
- 5 23. A method according to claim 22, wherein said one or more additional joins are concentric to the join.
24. A method according to any of claims 1 to 23, additionally comprising foldably interlocking the base sheet with the cover sheet to
10 provide a plurality of join sites therebetween and applying laser energy to form plural joins at each said site.
25. A method according to any of claims 1 to 24, additionally comprising applying laser energy to form score lines on the or each cover
15 sheet and/or base sheet.
26. A method according to claim 25, wherein said score lines facilitate access to each blister pocket.
- 20 27. A method according to claim 25, wherein the score lines facilitate separation of an individual blister pocket from the blister pack.
28. A method according to claim 25, wherein the score lines facilitate visual and/or electronic identification of said blister pack and/or blister
25 pocket.
29. A method according to any of claims 1 to 28, additionally comprising applying laser energy to cut the blister pack.
- 30 30. A method according to claim 29, comprising cutting the blister pack to a specifiable shape.
31. A method according to either of claims 29 or 30, comprising cutting the blister pack to a specifiable size.
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32. A method according to any of claims 29 to 31, comprising cutting the blister pack to provide sprocket holes therein.

33. A method according to claim 32, comprising cutting semi-circular incisions in the blister pack depressible to form sprocket holes therein.
- 5 34. A method according to any of claims 1 to 33, wherein the method is controllable by a computer.
35. A method according to any of claims 1 to 34 additionally comprising pre-filling the or each blister pocket with a product.
- 10 36. A method according to claim 35, wherein said product is an electronic component.
- 15 37. A method according to claim 36, wherein said electronic component is selected from the group consisting of semi-conductor, integrated circuit chip, fuse and battery.
38. A method according to claim 35, wherein the product is a food.
- 20 39. A method according to claim 38, wherein said food is selected from the group consisting of meat, mycoprotein, milk, cheese, flour, pasta, rice, oil, sugar, confectionery, vegetable, herbal, snack, convenience and fruit foodstuffs.
- 25 40. A method according to claim 35 wherein the product comprises a beverage.
- 30 41. A method according to claim 40, wherein said beverage is selected from the group consisting of water, milk, coffee, cocoa, tea, fruit, carbonated and alcoholic drinks.
42. A method according to claim 35 wherein the product comprises a toiletry.
- 35 43. A method according to claim 42, wherein said toiletry is selected from the group consisting of toothpaste, soap, mouthwash, shampoo, skin and face cream.

44. A method according to claim 35, wherein the product comprises a cleanser.
- 5 45. A method according to claim 44, wherein said cleanser is selected from the group consisting of soap, detergent, enzymic preparation and organic solvent.
- 10 46. A method according to claim 35, wherein the product comprises a disinfectant.
47. A method according to claim 46, wherein said disinfectant is selected from the group consisting of sterilant, antiseptic and bleach.
- 15 48. A method according to claim 35, wherein the product comprises a light-sensitive material.
49. A method according to claim 48, wherein said light-sensitive material comprises a photographic film.
- 20 50. A method according to claim 35, wherein the product comprises a marking material.
- 25 51. A method according to claim 50, wherein said marking material is selected from the group consisting of toner, ink, dye, pigment, acid and alkali.
52. A method according to claim 35, wherein the product comprises a covering material.
- 30 53. A method according to claim 52, wherein said covering material is selected from the group consisting of paint, pigment, dye, corrosion inhibitor, electrical conductor, electrical insulator and static inhibitor.
- 35 54. A method according to claim 35, wherein the product comprises a toy.
55. A method according to claim 54, wherein said toy is selected from the group consisting of model, figure, doll, animal, jig-saw and game.

56. A method according to claim 35, wherein the product comprises haberdashery.

5 57. A method according to claim 56, wherein said haberdashery is selected from the group consisting of button, bobbin, needle, pin, eye, hook and fastener.

10 58. A method according to claim 35, wherein the product comprises a tool.

59. A method according to claim 58, wherein said tool comprises a domestic tool.

15 60. A method according to claim 59, wherein said domestic tool is selected from the group consisting of can opener, bottle opener, ring-pull opener, scissors, knife, fork and spoon.

20 61. A method according to claim 58, wherein said tool comprises a home maintenance tool.

25 62. A method according to claim 61, wherein said home maintenance tool is selected from the group consisting of nail, screw, pin, wire, screwdriver, knife, brush, spanner, ruler and marker.

63. A method according to claim 35, wherein the product comprises stationery.

30 64. A method according to claim 63, wherein said stationery is selected from the group consisting of pencil, pen, ruler, crayon, eraser, marker, stencil, protractor, compass and paper.

35 65. A method according to claim 35, wherein the product is an adhesive.

66. A method according to claim 65, wherein said adhesive bonds materials selected from the group consisting of paper, plastic, wood, rubber, glass and metal.

67. A method according to claim 35, wherein the product is an agrochemical.
- 5 68. A method according to claim 67, wherein said agrochemical is selected from the group consisting of herbicide, insecticide, fungicide, rodenticide, nematocide, acaricide and plant growth regulator.
- 10 69. A method according to claim 35, wherein the product comprises a plant seed.
- 15 70. A method according to claim 69, wherein said seed is derived from plants selected from the group consisting of monocotyledonous and dicotyledonous plants.
71. A method according to claim 35, wherein the product comprises a contraceptive.
- 20 72. A method according to claim 71, wherein said contraceptive is either a contraceptive device or a contraceptive drug.
- 25 73. A method according to claim 72, wherein said contraceptive device is selected from the group consisting of condom, diaphragm, sponge and coil.
74. A method according to claim 72, wherein said contraceptive drug is selected from the group consisting of spermacide, estrogen, ethinyl estradiol, progesterone, levonorgestrel and norgestrel.
- 30 75. A method according to claim 35, wherein the product comprises a medical instrument.
76. A method according to claim 75, wherein said medical instrument is selected from the group consisting of scalpel, thermometer and syringe.
- 35 77. A method according to claim 35, wherein the product comprises laboratory equipment.

78. A method according to claim 77, wherein said equipment is selected from the group consisting of dispenser tip, microbial filter, filter paper, aseptic container, petri-plate, vial, test tube, tissue-culture vessel and pipette.

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79. A method according to claim 35, wherein the product comprises a catemenial product.

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80. A method according to claim 79, wherein said catemenial product comprises a tampon.

81. A method according to claim 35, wherein the product comprises a medicament.

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82. A method according to claim 81, wherein said medicament is in dry powder, tablet, liquid, paste, cream or capsular form.

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83. A method according to either of claims 81 or 82, wherein said medicament is selected from the group consisting of albuterol, salmeterol, ipratropium bromide, fluticasone propionate and beclomethasone dipropionate and salts or solvates thereof and any mixtures thereof.

84. Blister pack formable by the method of any of claims 1 to 56.

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PG3681/PCT	<div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> FOR FURTHER ACTION </div> <div style="width: 60%; font-size: small;"> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. </div> </div>	
International application No. PCT/EP 00/ 03517	International filing date (day/month/year) <div style="text-align: center;">19/04/2000</div>	(Earliest) Priority Date (day/month/year) <div style="text-align: center;">24/04/1999</div>
Applicant GLAXO GROUP LIMITED et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 03 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of Invention is lacking** (see Box II).

4. With regard to the **title**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

METHOD FOR MAKING A BLISTER PACKAGE

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☒ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

/EP 00/03517

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B65B11/50

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B65B B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 483 569 A (FMC) 6 May 1992 (1992-05-06)	1-4, 6-8, 10, 13, 19-21, 25-27, 34, 35, 84
Y	column 3, line 26 -column 5, line 58; figures 1-12	38, 39, 42, 43, 48, 49, 54-57, 65, 66, 71-73, 75, 81, 82
X	EP 0 472 850 A (FMC) 4 March 1992 (1992-03-04) abstract; figures 1-5	1, 84

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

16 August 2000

Date of mailing of the international search report

24/08/2000

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Authorized officer

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INTERNATIONAL SEARCH REPORT

International Application No

T/EP 00/03517

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Y	US 2 365 922 A (VAUGHN) 26 December 1944 (1944-12-26) page 1, column 1, line 1 - line 11 ---	42, 43
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Information on patent family members

International Application No

EP 00/03517

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